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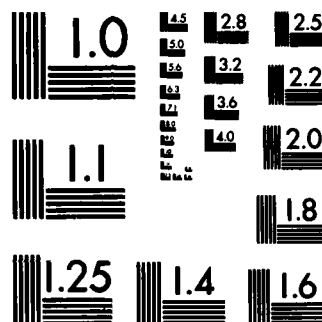
INVENTORY OF RARE OR ENDANGERED NON-VASCULAR PLANTS AND 1/1
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INVENTORY OF RARE OR ENDANGERED
NON-VASCULAR PLANTS AND FERNS OCCURRING
IN THE FLOODPLAIN OF THE MISSISSIPPI
RIVER BETWEEN CAIRO, ILLINOIS, AND
ST. PAUL, MINNESOTA, AND IN THE FLOODPLAIN
OF THE ILLINOIS RIVER BETWEEN GRAFTON,
ILLINOIS, AND CHICAGO

By

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Carbondale, Illinois

February 3, 1975

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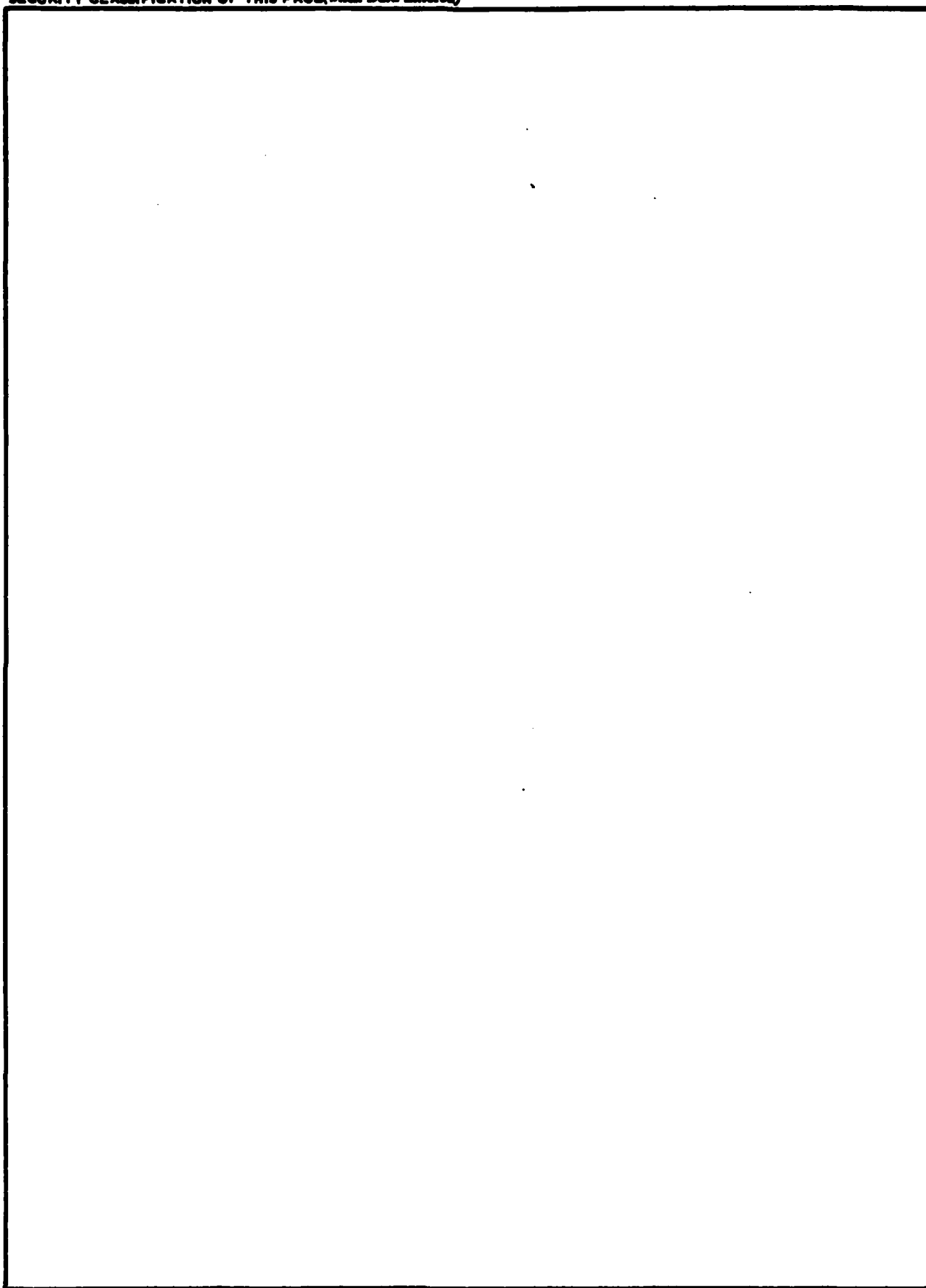
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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. AD-A122529	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Inventory of Rare or Endangered Non-Vascular Plants and Ferns Occurring in the Floodplain of the Mississippi River Between Cairo, IL and St. Paul, MN and in the Floodplain of the Illinois River Between Grafton, IL and Chicago		5. TYPE OF REPORT & PERIOD COVERED
7. AUTHOR(s) Robert H. Mohlenbrock		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Southern Illinois University Department of Botany Carbondale, IL		8. CONTRACT OR GRANT NUMBER(s) LMSSD 75-1762
11. CONTROLLING OFFICE NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) U.S. Army Engineer District, St. Louis 210 Tucker Boulevard, North St. Louis, Missouri 63101		12. REPORT DATE February 3, 1975
		13. NUMBER OF PAGES 63
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The primary objective of this study was to determine which species of non-vascular plants and ferns which occur in the Illinois and Mississippi River floodplains are rare or endangered. Other objectives were to list the habitats in which these species occur, in what medium or on what substrate, and the possible impacts on these plants by increased barge traffic.		

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Introduction

The St. Louis District, United States Army Corps of Engineers, is developing a list of rare and endangered species of non-vascular plants and ferns which are known to occur in the floodplain of the Mississippi River between Cairo, Illinois, and St. Paul, Minnesota, and in the floodplain of the Illinois River between Grafton, Illinois, and Chicago. A survey of the available literature, a study of herbarium specimens, and the investigator's own personal observations in the field for twenty-five years, have provided the foundation for this study.

The primary objective was to determine which species of non-vascular plants and ferns which occur in the Illinois and Mississippi River floodplains are rare or endangered. Other objectives were to list the habitats in which these species occur, in what medium or on what substrate, and the possible impacts on these plants by increased barge traffic.

Since non-vascular plants have never been studied with the intent to produce a list of officially rare or endangered species, there is no legal status for any alga, hornwort, liverwort, moss, or lichen in the study area. Missouri (1974) lists some mosses which are designated rare or endangered, but none is situated in the floodplains.

Ferns are considered in the lists of rare or endangered species by both Missouri (1974) and Illinois (1974), but only two species in either list occur in the floodplains.

The investigator has determined the relative abundance of each species of non-vascular plant and fern known to occur in the floodplains of the study area. This determination has been made on the abundance of collections and the investigator's observations. Rare

indicates that a species is known only from one or two collections. Occasional refers to species collected from three to eight times. Common is used for species collected nine or more times in the study area.

The floodplain was considered to be the area from bluff to bluff on either side of the Mississippi and Illinois Rivers. It included both protected and unprotected habitats. Seventy-one counties in five states comprised the study area.

Since the total number of species of non-vascular plants and ferns known from the floodplain is not great, the entire list is presented in this report. Certainly additional field work in the floodplains will add substantially to our present knowledge.

Following the enumeration of species, a brief discussion ensues concerning the possible impact of increased barge traffic as a result of the construction of L & D 26 (Replacement).

A bibliography covering non-vascular plants and ferns in the study area is appended.

Algae

Any moist area in the floodplains of the Mississippi and Illinois Rivers, including the rivers themselves, provides a habitat for algae.

The rivers apparently have a relatively limited number of species, although only a few studies have been made on the major rivers (Galtsoff, 1924; Kofoed, 1903, 1908). Streams and creeks tributary to the Mississippi and Illinois Rivers have an algal flora similar to the large rivers.

Lakes, oxbow lakes, ponds, and sinkholes which are found in the floodplain have a remarkable diverse algal flora, particularly of desmids and diatoms (Wunderlin, 1968; Weik and Mohlenbrock, 1963).

Two hundred sixty-eight species of algae have been collected in the area covered by this study, but no single attempt has been made specifically to ascertain the species of algae which occur in the floodplains of the Mississippi and Illinois Rivers.

There are no species of algae in the five-state study area which have been considered rare or endangered, although obviously some species should probably fall into this category.

Because no definitive study has been made of algal distribution in the floodplains, it is impossible to ascertain whether a species known from a single locality is actually more widespread or if it does have a restricted distribution.

Mosses

Most of the mosses enumerated in this study occur in low, floodplain woods or in swamps where they grow on moist soil, on rotting logs, or on the trunks of living trees. Some mosses occur in fallow fields in the floodplains. Still others occur on clayey or alluvial banks along the major rivers and their tributaries.

Eighty-nine species of mosses have been collected in the floodplains of the study area, but no single specific study has ever been made to determine the moss flora of the floodplains.

Of the five states considered in this study, only Missouri (1974) has attempted to designate rare or endangered species of mosses, and none of the mosses listed as rare or endangered for Missouri occurs in the floodplain of the Mississippi River.

Liverworts and Hornworts

Thirty-one species of liverworts and five species of hornworts have been collected from the floodplains of the Mississippi and Illinois Rivers. Many of these occur on decayed or rotting logs in low, floodplain woods or in swamps. Some are found on moist banks along the major rivers and their tributaries. A few, such as species of Riccia, are found in mud flats at the edge of the rivers. Rarely do the liverworts occur in open, fallow fields, although Sphaerocarpus texanus is an exception.

Few species of liverworts or hornworts have ever been designated as rare or endangered, although Missouri (1974) lists several, none of which occurs in the study area. There is a definite need for an intensive survey of the liverworts and hornworts in the floodplains of the study area.

Lichens

Lichens are probably the most poorly known group of non-vascular plants (other than fungi) in the five-state study area. Because of the difficulty of identification, few lichen authorities exist, and even fewer have been concerned with either the Mississippi or the Illinois River floodplains. Skorepa (1965) has studied the lichens of the Pine Hills area of Union County, Illinois, a portion of which lies in the floodplain of the Mississippi River.

There has been no attempt previously to determine the relative abundance of the lichens in the study area, and the comment by the investigator in this study is admittedly based on rather meagre collections.

Ferns

Most ferns occur in mesophytic forests or on cliffs. Only nine species of ferns or fern allies are found in the floodplains of the Illinois and Mississippi Rivers. Ophioglossum vulgatum is considered both rare and endangered in Illinois (1974) and rare in Missouri (1974), and Equisetum variegatum is listed as rare and endangered in Illinois (1974).

Algae of the Mississippi River and Illinois River Floodplains

The following list of algae is based on published records and private collections made by the investigator and some of his students. For each species there is given a statement of distribution indicating whether it is in the Illinois River floodplain and/or the Mississippi River floodplain. If it occurs only in those floodplains and nowhere else in the study area, this fact is indicated. If it occurs in other areas as well as in the floodplains, the term "and elsewhere" is used. A statement of habitat is given for each species, as well as an indication of abundance, based on the investigator's personal observation.

Nomenclature essentially follows Prescott (1962).

Division Chlorophyta

Family Polyblepharidaceae

Chloraster gyrans Ehr.
Along Illinois River (only Mason Co.).
Rivers.
Rare.

Family Chlamydomonadaceae

Carteria multifilis (Fresen.) Dill.
Along Illinois River and elsewhere.
Rivers; ponds.
Occasional.

Carteria globosa Korshikov
Mississippi River floodplain (only Union Co.).
Swamps.
Rare.

Family Phacotaceae

Phacotus lenticularis (Ehr.) Stein
Mississippi River floodplain and elsewhere.
Ponds; swamps.
Rare.

Family Volvocaceae

Eudorina elegans Ehr.

Along Mississippi and Illinois Rivers and elsewhere.

Rivers; ponds; lakes; oxbow lakes; swamps; sloughs; streams.

Common.

Gonium pectorale Muell.

Along Illinois River, in Mississippi River floodplain, and elsewhere.

Rivers; streams; ponds.

Occasional.

Pandorina morum (Muell.) Bory

Along Illinois River, in Mississippi River floodplain, and elsewhere.

Rivers; ponds; sinkholes; swamps; streams.

Common.

Platydorina caudata Kofoid

Along Mississippi and Illinois Rivers and elsewhere.

Rivers; streams; lakes; ponds.

Common.

Pleodorina californica Shaw

Along Illinois River and elsewhere.

Rivers; streams; lakes; ponds; sinkholes.

Common.

Pleodorina illinoisensis Kofoid

Along Illinois and Mississippi Rivers and elsewhere.

Rivers; streams; lakes; ponds; sinkholes.

Common.

Volvox aureus Ehr.

Along Illinois River and elsewhere.

Rivers; ponds; sloughs;

Occasional.

Volvox globator L.

Along Illinois River and elsewhere.

Rivers; streams; lakes; ponds; sinkholes.

Common.

Volvox spermatosphaera Powers.

Along Mississippi River (several counties), but not elsewhere.

Rivers.

Rare.

Family Palmellaceae

Gloeocystis gigas (Kuetz.) Lag.

Along Illinois River and elsewhere.

Rivers; ponds.

Occasional.

Family Ulotrichaceae

Stichococcus subtilis (Kuetz.) Klercker
Along Illinois River and elsewhere. .
Mud flats; pools; ponds; ditches; streams; swamps.
Common.

Ulothrix aequalis Kuetz.
Along Mississippi River and elsewhere.
Swamps.
Common.

Uronema elongatum Hodgetts
Along Mississippi River and elsewhere.
Sloughs; swamps.
Common.

Family Microsporaceae

Microspora amoena (Kuetz.) Rab.
Along Mississippi River and elsewhere.
Sloughs; swamps; pools.
Occasional.

Family Chaetophoraceae

Stigeoclonium lubricum (Dillw.) Kuetz.
Along Illinois River (only).
Rivers.
Occasional.

Stigeoclonium tenue (Ag.) Kuetz.
Along Illinois River and elsewhere.
Rivers; streams; ditches.
Common.

Family Cladophoraceae

Cladophora crispata (Roth) Kuetz.
Along Illinois River and elsewhere.
Rivers; streams; ponds.
Common.

Cladophora glomerata (L.) Kuetz.
Along Illinois River and elsewhere.
Rivers; streams; ponds; pools; ditches.
Common.

Family Chlorococcaceae

Golenkinia radiata (Chod.) Wille
 Along Illinois River and elsewhere.
 Rivers; ponds.
 Occasional.

Family Hydrodictyaceae

Pediastrum boryanum (Turp.) Menegh.
 Along Mississippi and Illinois Rivers.
 Rivers; streams; lakes; ponds; swamps.
 Common.

Pediastrum duplex Meyen
 Along Mississippi and Illinois Rivers and elsewhere.
 Rivers; streams; lakes; ponds; pools; swamps.
 Very common.

Pediastrum duplex Meyen var. *clathratum* (A. Braun) Lag.
 Mississippi River floodplain and elsewhere.
 Ditches; ponds; clay pits.
 Occasional.

Pediastrum simplex (Meyen) Lemm.
 Along Mississippi River and elsewhere.
 Rivers; streams; lakes; ponds; pools.
 Common.

Pediastrum tetras (Ehr.) Ralfs
 Mississippi River floodplain and elsewhere.
 Swamps; ponds; clay pits.
 Common.

Pediastrum tetras (Ehr.) Ralfs var. *tetraodon* (Corda) Rabenh.
 Mississippi River floodplain and elsewhere.
 Swamps; ponds.
 Occasional.

Sorastrum americanum (Bohlin) Schmidle
 Mississippi River floodplain and elsewhere.
 Swamps; clay pits.
 Rare.

Sorastrum spinulosum Naeg.
 Mississippi River floodplain and elsewhere.
 Swamps.
 Occasional.

Family Coelastraceae

Coelastrum cambricum Archer
 Along Illinois and Mississippi Rivers and elsewhere.
 Rivers; lakes; ponds.
 Common.

Coelastrum microporum Naeg.
 Mississippi River floodplain and elsewhere.
 Swamps; ponds; clay pits.
 Common.

Family Botryococcaceae

Botryococcus braunii Kuetz.
 Along Illinois River and elsewhere.
 Rivers; ponds.
 Occasional.

Family Oocystaceae

Ankistrodesmus falcatus (Corda) Ralfs
 Along Illinois River, in Mississippi River floodplain, and elsewhere.
 Rivers; streams; lakes; ponds; sinkholes; swamps.
 Common.

Ankistrodesmus falcatus (Corda) Ralfs var. *acicularis* (A. Braun)
 G. S. West
 Mississippi River floodplain and elsewhere.
 Swamps; ponds.
 Occasional.

Closteriopsis longissima Lemm.
 Along Illinois River and elsewhere.
 Rivers; ponds.
 Occasional.

Kirchneriella lunaris (Kirchner) Moeb.
 Mississippi River floodplain and elsewhere.
 Ponds; swamps.
 Occasional.

Dactylococcus infusionum Naeg.
 Along Illinois River (only Mason Co.).
 Rivers.
 Rare.

Oocystis elliptica W. West
 Along Mississippi River and elsewhere.
 Swamps; ditches; ponds.
 Occasional.

Oocystis naegelii A. Br.
 Along Illinois River (only Mason Co.).
 Rivers.
 Rare.

Oocystis solitaria Wittr.
 Along Illinois River and elsewhere.
 Rivers; lakes; ponds.
 Common.

Schroederia setigera (Schroed.) Lemm.
 Along Illinois River and elsewhere.
 Rivers.
 Occasional.

Selenastrum bibraianum Reinsch.
 Along Illinois River and elsewhere.
 Rivers.
 Occasional.

Selenastrum gracile Reinsch
 Mississippi River floodplain and elsewhere.
 Swamps; ponds.
 Occasional.

Tetraedron bifurcatum (Wille) Lag.
 Along Illinois River and elsewhere.
 Rivers; ponds.
 Occasional.

Tetraedron cruciatum (Wallich) West & West var. *reductum* Prescott
 Mississippi River floodplain.
 Swamps.
 Rare.

Tetraedron gracile (Reinsch) Hansg.
 Along Illinois River and elsewhere.
 Rivers; sinkholes.
 Occasional.

Tetraedron regulare Kuetz.
 Mississippi River floodplain and elsewhere.
 Swamps; ponds.
 Occasional.

Trochiscia reticularis (Reinsch) Hansg.
 Mississippi River floodplain and elsewhere.
 Swamps; ponds; clay pits.
 Occasional.

Tetraedron trigonum (Naeg.) Hansg.
 Along Illinois River and elsewhere.
 Rivers; sinkholes.
 Occasional.

Tetraedron trigonum (Naeg.) Hansg. var. *minus* Reinsch.
 Along Illinois River (only Mason Co.).
 Rivers.
 Rare.

Tetraedron trigonum (Naeg.) Hansg. var. *tetragonum* (Naeg.) Rab.
 Along Illinois River (only Mason Co.).
 Rivers.
 Rare.

Family Scenedesmaceae

Actinastrum hantzschii Lag.
 Along Mississippi River and elsewhere.
 Rivers; lakes.
 Occasional.

Crucigenia lauterbornii Schmid.
 Along Illinois and Mississippi Rivers and elsewhere.
 Rivers.
 Rare.

Crucigenia rectangularis (A. Braun) Gay
 Along Illinois River and elsewhere.
 Rivers; ponds.
 Occasional.

Crucigenia tetrapedia (Kirch.) West & West
 Along Illinois River (only Mason Co.).
 Rivers.
 Rare.

Micractinium pusillum Fresen.
 Along Illinois River and elsewhere.
 Rivers; streams; lakes.
 Common.

Scenedesmus abundans (Kirchner) Chodat
 Mississippi River floodplain and elsewhere.
 Swamps; ponds.
 Occasional.

Scenedesmus acuminatus (Lag.) Chod.
 Along Mississippi River and elsewhere.
 Rivers; swamps; ponds; lakes.
 Common.

Scenedesmus acutiformis Schroeder
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Occasional.

Scenedesmus bijuga (Turpin) Lag.
Along Illinois River, in Mississippi River floodplain, and elsewhere.
Rivers; ponds; sinkholes; swamps.
Common.

Scenedesmus bijuga (Turpin) Lag. var. *alternans* (Reinsch) Hansg.
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Occasional.

Scenedesmus denticulatus Lag.
Along Illinois River (only Mason Co.).
Rivers.
Rare.

Scenedesmus longus Mey. var. *minutus* G. M. Smith
Along Mississippi River (only).
Rivers.
Occasional.

Scenedesmus obliquus (Turp.) Kuetz.
Along Illinois River and elsewhere.
Rivers; swamps; ponds; streams.
Common.

Scenedesmus quadricauda (Turp.) Breb.
Along Mississippi and Illinois Rivers and elsewhere.
Rivers; streams; sloughs; ponds; lakes; swamps.
Common.

Tetrastrum elegans Playfair
Mississippi River floodplain.
Ditches.
Rare.

Family Zygnemataceae

Spirogyra triplicata (Coll.) Trans.
Along Illinois River and elsewhere.
Rivers; streams; ponds.
Occasional.

Family Mesotaeniaceae

Gonatozygon brebissonii DeBary
Along Illinois River and elsewhere.
Rivers; ponds.
Occasional.

Family Desmidiaceae

Closterium acerosum (Schr.) Ehr.
 Along Mississippi and Illinois Rivers and elsewhere.
 Rivers; ponds; lakes; oxbow lakes; streams; sinkholes.
 Common.

Closterium acutum (Lyngbye) Breb.
 Mississippi River floodplain and elsewhere.
 Swamps; ponds.
 Common.

Closterium acutum (Lyngbye) Breb. var. *linea* (Perty) West & West
 Mississippi River floodplain (only Union Co.).
 Ditches; pond.
 Rare.

Closterium acutum (Lyngbye) Breb. var. *variabile* (Lemm.) Krieger
 Mississippi River floodplain (only Union Co.).
 Ponds; ditches.
 Rare.

Closterium ehrenbergii Meneghini
 Mississippi River floodplain and elsewhere.
 Swamps; ponds; clay pits.
 Common.

Closterium gracile Breb.
 Along the Illinois River, in Mississippi River floodplain, and elsewhere.
 Rivers; ponds; lakes.
 Common.

Closterium incurvum Breb.
 Mississippi River floodplain (only Union Co.).
 Swamps; ponds.
 Rare.

Closterium juncidum Ralfs
 Mississippi River floodplain and elsewhere.
 Swamps; bogs; pools.
 Occasional.

Closterium kuetzingii Breb.
 Mississippi River floodplain and elsewhere.
 Swamps; ponds.
 Common.

Closterium libellula Forke
 Mississippi River floodplain (only Union Co.).
 Swamps; ponds.
 Rare.

Closterium lineatum Ehr.
Mississippi River floodplain and elsewhere.
Swamps; ponds; lakes.
Occasional.

Closterium littorale Gay
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Occasional.

Closterium lunula (Muell.) Nitz.
Along the Illinois River, in Mississippi River floodplain, and elsewhere.
Rivers; lakes; ponds; swamps.
Common.

Closterium parvulum Naeg.
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Occasional.

Closterium praelongum Breb.
Mississippi River floodplain (only Union Co.).
Swamps; ponds.
Occasional.

Closterium praelongum Breb. f. *brevior* West
Mississippi River floodplain (only Union Co.).
Swamps.
Rare.

Closterium pronum Breb.
Mississippi River floodplain (only Union Co.).
Swamps; ponds.
Rare.

Closterium rostratum Ehr.
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Occasional.

Closterium setaceum Ehr.
Mississippi River floodplain (only Union Co.).
Swamps.
Rare.

Closterium venus Kuetz.
Mississippi River floodplain and elsewhere.
Swamps; ponds; streams.
Common.

Pleurotaenium trabecula (Ehr.) Naeg.
Mississippi River floodplain and elsewhere.
Swamps; rivers; lakes; streams; ponds; pools.
Common.

Euastrum verrucosum Ehr. var. *alatum* Wolle
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Common.

Micrasterias americana (Ehr.) Ralfs
Mississippi River floodplain and elsewhere.
Swamps; ponds; clay pits.
Common.

Micrasterias mahabuleshwariensis Hobson
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Occasional.

Micrasterias radiata Hassall
Mississippi River floodplain and elsewhere.
Swamps; ponds; clay pits.
Common.

Micrasterias sol (Ehr.) Kuetz.
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Occasional.

Micrasterias truncata (Corda) Breb. var. *pusilla* G. S. West
Mississippi River floodplain (only Union Co.).
Swamps.
Rare.

Cosmarium bipunctatum Boergesen
Mississippi River floodplain (only Union Co.).
Swamps; ponds.
Occasional.

Cosmarium biretum Breb.
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Common.

Cosmarium circulare Reinsch
Mississippi River floodplain and elsewhere.
Swamps; ponds; clay pits.
Common.

Cosmarium constrictum Delp.
 Along the Illinois River and elsewhere.
 Rivers; lakes; ponds.
 Occasional.

Cosmarium contractum Kirchner var. *ellipsoideum* (Elfving) West &
 West
 Mississippi River floodplain (only Union Co.).
 Swamps.
 Rare.

Cosmarium galeritum Nordstedt
 Mississippi River floodplain and elsewhere.
 Swamps; ponds; creeks.
 Common.

Cosmarium impressulum Elfving
 Mississippi River floodplain and elsewhere.
 Swamps; ponds; creeks.
 Occasional.

Cosmarium lepidum West
 Mississippi River floodplain (only Union Co.).
 Swamps.
 Rare.

Cosmarium portianum Archer
 Mississippi River floodplain and elsewhere.
 Swamps; ponds; clay pits.
 Common.

Cosmarium pseudocornutum Nordstedt
 Mississippi River floodplain (only Union Co.).
 Swamps; ponds.
 Rare.

Cosmarium quadratum Ralfs
 Mississippi River floodplain (only Union Co.).
 Swamps.
 Rare.

Cosmarium sexangulare Lundell f. *minima* Nordstedt
 Mississippi River floodplain and elsewhere.
 Swamps.
 Occasional.

Cosmarium subprotumidum Nordstedt
 Mississippi River floodplain and elsewhere.
 Swamps; ponds; lakes.
 Occasional.

Cosmarium tinctum Ralfs
Mississippi River floodplain (only Union Co.).
Swamps.
Rare.

Cosmarium turpinii Breb.
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Common.

Xanthidium antilopaeum (Breb.) Kuetz. var. *polymazum* Nordstedt
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Occasional.

Staurodesmus convergens (Ehr.) Teiling
Mississippi River floodplain and elsewhere.
Swamps; clay pits.
Occasional.

Staurodesmus cuspidatus (Breb.) Teiling
Mississippi River floodplain and elsewhere.
Swamps; clay pits; ponds.
Occasional.

Cosmocladium saxonicum DeBary
Along the Illinois River (only Mason Co.).
Rivers.
Rare.

Staurostrum furcigerum Breb.
Mississippi River floodplain (only Union Co.).
Swamps.
Rare.

Staurostrum gracile Ralfs
Along the Mississippi and Illinois River and elsewhere.
Rivers; streams; lakes; ponds.
Common.

Staurostrum hexacerum (Ehr.) Wittrock
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Occasional.

Staurostrum tetracerum Ralfs
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Common.

Hyalotheca mucosa (Mertens) Ehr.
Mississippi River floodplain and elsewhere.
Swamps; ponds; sloughs.
Common.

Desmidium aptogonum Breb.
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Occasional.

Desmidium baileyi (Ralfs) Nordstedt
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Occasional.

Desmidium swartzii C. A. Agardh
Mississippi River floodplain and elsewhere.
Swamps; ponds; sloughs; clay pits.
Common.

Division Euglenophyta

Family Euglenaceae

Euglena acus Ehr.
Along the Mississippi and Illinois Rivers and elsewhere.
Rivers; streams; ponds; lakes; sinkholes.
Common.

Euglena agilis Carter
Mississippi River floodplain (only Union Co.).
Ditches.
Rare.

Euglena deses Ehr.
Along the Illinois River and elsewhere.
Rivers; streams; ponds.
Common.

Euglena elatica Prescott
Mississippi River floodplain (only Union Co.).
Ditches; ponds.
Rare.

Euglena elongata Schew.
Along the Illinois River (only Mason Co.).
Rivers.
Rare.

Euglena gracilis Klebs
 Along the Illinois River and elsewhere.
 Rivers; ponds; ditches; pools.
 Common.

Euglena hemichromata Skuja
 Mississippi River floodplain and elsewhere.
 Ponds; swamps; lakes.
 Occasional.

Euglena minuta Prescott
 Mississippi River floodplain (only Union Co.).
 Ditches.
 Rare.

Euglena oxyuris Schmarida
 Along the Illinois and Mississippi Rivers and elsewhere.
 Rivers; sloughs; swamps; sinkholes.
 Common.

Euglena proxima Dangeard
 Mississippi River floodplain and elsewhere.
 Ditches; ponds.
 Occasional.

Euglena sanguinea Ehr.
 Along the Illinois River and elsewhere.
 Rivers; ponds; pools; sinkholes.
 Common.

Euglena spirogyra Ehr.
 Along the Mississippi and Illinois Rivers and elsewhere.
 Rivers; streams; ponds; lakes; sinkholes; swamps.
 Common.

Euglena viridis Ehr.
 Along the Mississippi and Illinois Rivers and elsewhere.
 Rivers; streams; lakes; ponds; pools; sloughs; sinkholes.
 Common.

...
Lepocinclis ovum (Ehr.) Lemm.
 Along the Illinois River and elsewhere.
 Rivers; ponds.
 Occasional.

Phacus acuminatus Stokes
 Mississippi River floodplain and elsewhere.
 Swamps; ponds; lakes; clay pits.
 Common.

Phacus atraktoides Pochmann
Mississippi River floodplain (only Union Co.).
Lakes.
Rare.

Phacus bacillifer Da Cunha
Mississippi River floodplain (only Union Co.).
Swamps.
Rare.

Phacus caudatus Huebner
Mississippi River floodplain and elsewhere.
Lakes; ponds; creeks; rivers; borrow pits.
Common.

Phacus caudatus Huebner var. *minor* Drez.
Mississippi River floodplain and elsewhere.
Lakes; sloughs.
Occasional.

Phacus circulatus Pochmann
Along Mississippi River and elsewhere.
Swamps; ponds; gravel pits.
Occasional.

Phacus concinnus Weik
Mississippi River floodplain (only Union Co.).
Lakes.
Rare.

Phacus curvicaudus Swirenko
Mississippi River floodplain and elsewhere.
Swamps; ponds; creeks; rivers; sinkholes; borrow pits.
Common.

Phacus denisii Allorge & Lefevre
Along Mississippi River and elsewhere.
Ponds; lakes; creeks.
Occasional.

Phacus globosus Pochmann
Along Illinois River (only LaSalle Co.).
Rivers.
Rare.

Phacus helikoides Pochmann
Along Mississippi River (only Carroll Co.).
Ponds.
Rare.

Phacus inflexus (Kisselew) Pochmann
Mississippi River floodplain (only Union Co.).
Lakes.
Rare.

Phacus inornatus Weik
Mississippi River floodplain (only Union Co.).
Swamps.
Rare (only known locality for this species).

Phacus lismorensis Playfair
Mississippi River floodplain.
Swamps; ditches.
Rare.

Phacus longicaudus (Ehr.) Duj.
Along Mississippi and Illinois Rivers and elsewhere.
Rivers; streams; lakes; ponds; swamps.
Common.

Phacus longicaudus (Ehr.) Duj. var. *major* Swirenko
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Rare.

Phacus makrostigma Pochmann
In Mississippi River floodplain (only Alexander Co.).
Ditches.
Rare.

Phacus minutus (Playfair) Pochmann
In Mississippi River floodplain (only Alexander Co.).
Ditches.
Rare.

Phacus orbicularis Huebner
Along Mississippi River and elsewhere.
Swamps; ponds; lakes.
Common.

Phacus oscillans Klebs
Along Mississippi River and elsewhere.
Creeks; lakes; swamps; ditches.
Occasional.

Phacus ozmentii Weik
In Mississippi River floodplain (only Monroe Co.).
Lakes.
Rare (only known locality for this species).

Phacus petelotii Lefevre
 Along Illinois River (only LaSalle Co.).
 Rivers.
 Rare.

Phacus platalea Drez.
 Mississippi River floodplain and elsewhere.
 Creeks; lakes; ponds; swamps.
 Occasional.

Phacus platalea Drez. var. *major* de Pouques
 Along Mississippi River and elsewhere.
 Swamps; creeks; lakes; ponds.
 Occasional.

Phacus pleuronectes (O. F. M.) Duj.
 Along the Illinois and Mississippi Rivers and elsewhere.
 Rivers; streams; lakes; ponds; sinkholes; swamps.
 Common.

Phacus pulchra Roll
 Mississippi River floodplain (only Alexander Co.).
 Oxbow lakes.
 Rare.

Phacus pusillus Lemm.
 Along Mississippi River and elsewhere.
 Creeks; sloughs; swamps.
 Occasional.

Phacus pyrum (Ehr.) Stein
 Mississippi River floodplain and elsewhere.
 Swamps; bluffs; ponds; clay pits.
 Common.

Phacus suecicus Lemm.
 Mississippi River floodplain and elsewhere.
 Swamps; lakes; ponds.
 Occasional.

Phacus swirenkoi Skvortzow
 Along Mississippi River and elsewhere.
 Ponds; rivers; swamps.
 Occasional.

Phacus tortus (Lemm.) Skvortzow
 Mississippi River floodplain and elsewhere.
 Swamps; ponds; ditches.
 Common.

Phacus trimarginatus Allegre & Jahn
 Along Mississippi River and elsewhere.
 Lakes; ponds.
 Occasional.

Phacus triqueter (Ehr.) Duj.
Mississippi River floodplain and elsewhere.
Ponds; lakes.
Occasional.

Trachelomonas abrupta Swirenko var. *obesa* (Playfair) Deflandre
Mississippi River floodplain (only Union Co.).
Swamps.
Rare.

Trachelomonas charkowiensis Swirenko
Mississippi River floodplain and elsewhere.
Swamps; clay pits.
Occasional.

Trachelomonas coronata Swirenko
Mississippi River floodplain and elsewhere.
Ditches; ponds.
Common.

Trachelomonas cylindrica Ehr.
Along Mississippi River and elsewhere.
Ditches; ponds; lakes.
Common.

Trachelomonas dangeardii Skvortzow
Mississippi River floodplain (only Union Co.).
Ditches.
Rare.

Trachelomonas dubia (Swirenko) Deflandre
Mississippi River floodplain and elsewhere.
Swamps; ponds.
Rare.

Trachelomonas dybowskii Drez.
Mississippi River floodplain (only Union Co.).
Ditches.
Rare.

Trachelomonas fluviatilis Lemm.
Mississippi River floodplain (only Union Co.).
Ditches.
Rare.

Trachelomonas hispida (Perty) Stein var. *coronata* Lemm.
Mississippi River floodplain and elsewhere.
Ditches; swamps; ponds; lakes.
Common.

Trachelomonas planctonica Swirenko
Mississippi River floodplain (only Union Co.).
Ditches.
Rare.

Trachelomonas robusta (Swirenko) Deflandre
Mississippi River floodplain and elsewhere.
Swamps; ponds; lakes; clay pits.
Common.

Trachelomonas scabra Playfair var. *torta* Weik & Mohlenbrock
Mississippi River floodplain and elsewhere.
Swamps; ponds; lakes.
Occasional.

Trachelomonas volvocinopsis Swirenko
Along Mississippi River and elsewhere.
Ponds; lakes; swamps; clay pits.
Common.

Division Chrysophyta

Family Mallomonadaceae

Mallomonas acaroides Perty
Along Illinois River and in Mississippi River floodplain.
Rivers; ditches.
Rare.

Family Snycryptaceae

Syncrypta volvox Ehr.
Along Illinois River.
Rivers;
Rare.

Family Synuraceae

Synura uvella Ehr.
All along Mississippi and Illinois Rivers and elsewhere.
Rivers; oxbow lakes; lakes; ponds; swamps.
Common.

Family Ochromonadaceae

Dinobryon bavaricum Imhof
Along Illinois River and elsewhere.
Rivers; lakes.
Occasional.

Dinobryon cylindricum Imhof
 Along Illinois River and elsewhere.
 Rivers; lakes.
 Occasional.

Dinobryon divergens Imhof
 Along Illinois River and elsewhere.
 Rivers; lakes.
 Common.

Dinobryon pediforme (Lemm.) Stein.
 Along Illinois River.
 Rivers.
 Rare.

Dinobryon sertularia Ehr.
 Along Illinois River and elsewhere.
 Rivers; lakes; swamps; ponds; sinkholes.
 Common.

Dinobryon sertularia Ehr. var. *protuberans* (Lemm.) Krieg.
 Along Illinois River and elsewhere.
 Rivers; lakes.
 Occasional.

Dinobryon sociale Ehr.
 Along Illinois River and elsewhere.
 Rivers; lakes.
 Common.

Dinobryon sociale Ehr. var. *americanum* (Brunnth.) Bachm.
 Along Illinois River and elsewhere.
 Rivers; lakes.
 Occasional.

Family Coscinodiscaceae

Cyclotella kuetzingiana Thw.
 Along Illinois River and elsewhere.
 Rivers; lakes.
 Common.

Cyclotella meneghiniana Kuetz.
 Along Mississippi River and elsewhere.
 Rivers; lakes.
 Common.

Melosira crenulata (Ehr.) Kuetz.
 Along Mississippi River and elsewhere.
 Rivers; lakes.
 Common.

Melosira distans (Ehr.) Kuetz.
 Along Mississippi River (only St. Clair Co.).
 Rivers.
 Rare.

Melosira granulata (Ehr.) Ralfs
 Along Mississippi and Illinois Rivers and elsewhere.
 Rivers; lakes; sinkholes.
 Very common.

Melosira juergensii Ag.
 Along Mississippi River (only Hancock Co.).
 Lakes.
 Rare.

Melosira varians Ag.
 Along Illinois River and elsewhere.
 Rivers; ponds; creeks; ditches; sinkholes.
 Very common.

Stephanodiscus niagarae Ehr.
 Along Illinois and Mississippi Rivers and elsewhere.
 Rivers; lakes.
 Common.

Family Rhizosoleniaceae

Rhizosolenia eriensis H. L. Smith
 Along Illinois River and elsewhere.
 Rivers; lakes.
 Common.

Family Tabellariaceae

Tabellaria fenestrata (Lyngb.) Kuetz.
 Along Illinois River and elsewhere.
 Rivers.
 Very common.

Tabellaria flocculosa (Roth) Kuetz.
 Along Illinois River and elsewhere.
 Rivers; lakes.
 Very common.

Family Meridionaceae

Meridion circulare (Grev.) Ag.
 Along Illinois River and elsewhere.
 Rivers; creeks; ditches.
 Common.

Family Diatomaceae

Diatoma elongatum var. *tenuis* (Ag.) V. H. Boyer
Along Illinois River (only Mason Co.).
Rivers.
Rare.

Diatoma vulgare Bory
Along Illinois River (only Mason Co.).
Rivers; creeks.
Occasional.

Family Fragilariaceae

Asterionella formosa Hass.
Along Illinois River and elsewhere.
Rivers; lakes.
Occasional.

Asterionella gracillima (Hantz.) Heib.
Along Mississippi and Illinois Rivers and elsewhere.
Rivers; lakes.
Very common.

Fragilaria capucina Desmaz.
Along Mississippi River and elsewhere.
Rivers; streams; ditches.
Common.

Fragilaria constricta Ehr.
Along Mississippi River (only St. Clair Co.).
Rivers.
Rare.

Fragilaria crotonensis Kitton.
Along Mississippi and Illinois Rivers and elsewhere.
Rivers; lakes.
Common.

Fragilaria virescens Ralfs
Along Illinois River and elsewhere.
Rivers; lakes.
Common.

Synedra acus Kuetz.
Along Illinois River and elsewhere.
Rivers; streams; ponds.
Common.

Synedra acus Kuetz. var. *radians* (Kuetz.) Hust.
 Along Mississippi and Illinois Rivers and elsewhere.
 Rivers; lakes; sinkhole ponds.
 Very common.

Synedra capitata Ehr.
 Along Illinois River and elsewhere.
 Rivers; lakes.
 Occasional.

Synedra hyalina Prov.
 Along Illinois River (only Mason Co.).
 Rivers.
 Rare.

Synedra ulna (Nitz.) Ehr.
 Along Illinois and Mississippi Rivers and elsewhere.
 Rivers; lakes; sinkhole ponds; ditches.
 Very common.

Family Eunotiaceae

Eunotia flexuosa (Breb.) Kuetz.
 Along Illinois River (only Peoria Co.).
 Rivers.
 Rare.

Family Achmanthaceae

Cocconeis pediculus Ehr.
 Along Illinois River and elsewhere.
 Rivers; streams; lakes; ponds.
 Common.

Family Naviculaceae

Gyrosigma acuminatum (Kuetz.) Cl.
 Along Mississippi River and elsewhere.
 Rivers; lakes.
 Common.

Gyrosigma spenceri (Quek.) Cl.
 Along Mississippi River and elsewhere.
 Rivers; lakes.
 Common.

Navicula confervacea (Kuetz.) Grun.
 Along Mississippi River (only Hancock and Henderson cos.).
 Rivers.
 Occasional.

Neidium amphirhyncus (Ehr.) Pfitz.
Along Mississippi River and elsewhere.
Rivers; lakes.
Occasional.

Neidium iridis (Ehr.) Pfitz.
Along Illinois River and elsewhere.
Rivers; lakes.
Occasional.

Family Gomphonemataceae

Gomphonema constrictum Ehr.
Along Illinois River and elsewhere.
Rivers; creeks; ditches.
Common.

Family Cymbellaceae

Cymbella prostrata (Berk.) Cl.
Along Illinois River and elsewhere.
Rivers; lakes.
Occasional.

Epithemia turgida (Ehr.) Kuetz.
Along Illinois River and elsewhere.
Rivers; lakes.
Occasional.

Epithemia turgida (Ehr.) Kuetz. var. *westermanii* (Ehr.) Grun.
Along Mississippi River (only St. Clair Co.).
Rivers.
Rare.

Family Nitzschiaceae

Hantzschia amphioxys (Ehr.) Grun.
Along Illinois River and elsewhere.
Rivers; streams; ditches.
Common.

Nitzschia sigmoidea (Nitz.) W. Smith
Along Illinois River and elsewhere.
Rivers; streams; lakes; ponds.
Common.

Family Surirellaceae

Cymatopleura solea (Breb.) W. Smith
 Along Illinois River and elsewhere.
 Rivers; streams; lakes.
 Common.

Surirella minuta Breb.
 Along Illinois River and elsewhere.
 Rivers; streams; ditches.
 Occasional.

Surirella ovata Kuetz.
 Along Illinois River and elsewhere.
 Rivers; streams; lakes.
 Occasional.

Surirella spiralis Kuetz.
 Along Illinois River and elsewhere.
 Rivers; streams.
 Occasional.

Surirella splendida (Ehr.) Kuetz.
 Along Illinois River and elsewhere.
 Rivers; streams; lakes.
 Occasional.

Division Pyrrophyta

Family Chloromonadaceae

Gonyostomum semen (Ehr.) Diesing
 Mississippi River floodplain (only Union Co.).
 Swamps.
 Rare.

Family Gymnodiniaceae

Gymnodinium limneticum Lackey
 Mississippi River floodplain and elsewhere.
 Swamps; ponds.
 Occasional.

Family Phytodiniaceae

Cystodinium cornifax (Schilling) Klebs
 Mississippi River floodplain (only Union Co.).
 Swamps.
 Rare.

Family Peridiniaceae

Peridinium bipes Stein
Along the Illinois River and elsewhere.
Rivers; lakes; ponds.
Common.

Peridinium cinctum (Muell.) Ehr.
Along the Illinois River and elsewhere.
Ponds.
Rare.

Family Ceratiaceae

Ceratium cornutum (Ehr.) Clap. & Lachm.
Along the Illinois River and elsewhere.
Rivers; ponds.
Occasional.

Ceratium hirundinella (O. F. Muell.) Duj.
Along the Mississippi and Illinois Rivers and elsewhere.
Rivers; streams; lakes; ponds; sloughs; sinkholes.
Common.

Division Cyanophyta

Family Chroococcaceae

Anacystis rupestris (Lyngbye) D. & D. Daily
Along Illinois River and elsewhere.
Moist, sandy depressions.
Occasional.

Coelosphaerium confertum West & West
Along Mississippi River and elsewhere.
Ditches.
Occasional.

Merismopedia glauca (Ehr.) Kuetz.
Along Mississippi and Illinois Rivers and elsewhere.
Ponds; ditches; oxbow lakes; lakes.
Common.

Merismopedia trolleri Bachmann
Mississippi River floodplain (only Union Co.).
Swamps.
Rare.

Microcystis aeruginosa Kuetz.
 Along Mississippi and Illinois Rivers and elsewhere.
 Lakes; ponds; swamps.
 Common.

Family Oscillatoriaceae

Arthrospira gomontiana Setchell
 Mississippi River floodplain (only Union Co.).
 Lakes.
 Rare.

Lyngbya versicolor (Wart.) Gom.
 Along Illinois River.
 Rivers.
 Rare.

Oscillatoria agardhii Gom.
 Along Mississippi and Illinois Rivers.
 Swamps; pools; streams; ponds; ditches.
 Common.

Oscillatoria amoena (Kuetz.) Gom.
 Along Mississippi River and elsewhere.
 Ponds.
 Occasional.

Oscillatoria limosa C. A. Agardh
 Along Illinois and Mississippi Rivers and elsewhere.
 Ponds; creeks; swamps.
 Common.

Oscillatoria princeps Vaucher
 Mississippi River floodplain.
 Ponds; swamps.
 Occasional.

Oscillatoria profunda Kirchner
 Mississippi River floodplain (only Union Co.).
 Swamps.
 Rare.

Oscillatoria splendida Greville
 Along Mississippi and Illinois Rivers and elsewhere.
 Ponds; swamps; clay pits.
 Common.

Oscillatoria tenuis C. A. Agardh var. *tergestina* (Kuetz.) Rab.
 Mississippi River floodplain and elsewhere.
 Ponds; lakes; swamps.
 Occasional.

Phormidium uncinatum (C. A. Agardh) Gom.
Along Illinois River and elsewhere.
Rivers.
Occasional.

Family Nostocaceae

Anabaena azollae Strasburger
Mississippi River floodplain.
Swamps.
Rare.

Anabaena circinalis (Kuetz.) Rab.
Along Mississippi River and elsewhere.
Ponds; sloughs.
Common.

Anabaena flos-aquae (Lyngbye) Breb.
Along Mississippi River and elsewhere.
Ponds; sloughs.
Common.

Anabaena planctonica Brunnth.
Along Mississippi River and elsewhere.
Rivers; ponds.
Occasional.

Anabaena spiroides Kleb.
Along Mississippi River and elsewhere.
Ponds.
Common.

Anabaena unispora Gardner
Mississippi River floodplain and elsewhere.
Lakes; springs.
Occasional.

Aphanizomenon flos-aquae (L.) Ralfs
Along Mississippi River and elsewhere.
Ponds; rivers.
Common.

Family Rivulariaceae

Rivularia aquatica de Wildeman
Mississippi River floodplain (only Union Co.).
Swamps.
Rare.

Mosses of the Mississippi and Illinois River Floodplains

The following list of mosses (Musci) is based, for the most part, on collections in the herbarium of Southern Illinois University, Carbondale, and in a few private herbaria. For each species in the list, there is a statement indicating its habitat and its substrate. An indication of abundance is given, based upon existing collections and the investigator's personal observation.

Nomenclature follows Crum, Steere, and Anderson (1973).

Family Fissidentaceae

Fissidens adiantoides Hedw.
Along rivers.
Moist banks.
Common.

Fissidens bryoides Hedw.
Floodplains.
Moist soil.
Common.

Fissidens cristatus Wils.
Low, floodplain woods.
Bark of trees.
Occasional.

Fissidens fontanus (Beauv.) Steud.
Low woods; swamps.
On rotting logs.
Occasional.

Fissidens osmundioides Hedw.
Floodplains.
Moist soil.
Occasional.

Fissidens taxifolius Hedw.
Low, floodplain woods.
Damp, shaded soil.
Rare.

Fissidens viridulus (Sw.) Wahlenb.
Swamps.
On logs.
Rare.

Family Ditrichaceae

Pleuridium acuminatum Lindb.
Floodplains.
Clayey soils; ditches.
Common.

Pleuridium subulatum (Hedw.) Rabenh.
Floodplains.
Ditches; fields; banks.
Common.

Pleuridium sullivantii Aust.
Floodplains.
Ditches; fields.
Occasional.

Ceratodon purpureus (Hedw.) Brid.
Swamps; open areas.
Wet soil.
Common.

Ditrichum pusillum (Hedw.) Hampe
Ditches.
Moist soil.
Occasional.

Family Dicranaceae

Bruchia sullivantii Aust.
Open fields in the floodplains.
Moist soil.
Occasional.

Dicranella heteromalla (Hedw.) Schimp.
Along rivers.
Banks.
Occasional.

Dicranella varia (Hedw.) Schimp.
Along rivers.
Banks.
Common.

Dicranum flagellare Hedw.
Swamps; low, floodplain woods.
On rotting logs.
Occasional.

Dicranum montanum Hedw.
Low, floodplain woods.
On rotting logs.
Occasional.

Dicranum scoparium Hedw.
Swamps; low, floodplain woods.
On rotting logs.
Common.

Family Pottiaceae

Weissia controversa Hedw.
Open fields and banks in the floodplains.
On moist soil.
Occasional.

Tortella humilis (Hedw.) Jenn.
Flatwoods (Union Co., Ill.).
Base of trees.
Rare.

Barbula unguiculata Hedw.
Banks and fields along the rivers.
On moist soil.
Occasional.

Dematodon obtusifolius (Schwaegr.) Schimp.
Along Illinois River (Mason Co.).
Sandy soil.
Rare.

Family Physcomitrium

Physcomitrium pyriforme (Hedw.) Hampe
Open areas in the floodplains.
Moist soil.
Common.

Funaria flavicans Michx.
Along rivers.
On bare soil.
Occasional.

Funaria hygrometrica Hedw.
Along rivers.
On bare soil.
Common.

Family Bryaceae

Pohlia nutans (Hedw.) Lindb.
Along rivers; swamps.
On rotting wood; on sand.
Occasional.

Leptobryum pyriforme (Hedw.) Wils.
Floodplain fields.
On moist soil.
Occasional.

Bryum argenteum Hedw.
Along rivers.
On moist sand.
Occasional.

Bryum caespitium Hedw.
Floodplains.
On moist soil.
Common.

Bryum pseudotriquetrum (Hedw.) Gaertn., Meyer & Scherb. var. *bimum*
(Schreb.) Lilj.
Swamps.
On moist soil.
Rare.

Rhodobryum roseum (Hedw.) Limpr.
Low, floodplain woods.
On rotting logs; on soil.
Occasional.

Family Mniaceae

Mnium cuspidatum Hedw.
Floodplain fields; low, floodplain woods.
On moist soil.
Common.

Mnium marginatum (With.) Brid.
Floodplains.
On moist soil.
Occasional.

Mnium punctatum Hedw.
Swamps.
On wet soil.
Occasional.

Mnium medium B. S. G.
Floodplains.
On wet soil.
Occasional.

Mnium stellare Hedw.
Low, floodplain woods.
On moist soil.
Rare.

Family Orthotrichaceae

Orthotrichum pusillum Mitt.
Low, floodplain woods.
On bark.
Occasional.

Drummondia prorepens (Hedw.) Britt.
Low, floodplain woods.
On bark.
Occasional.

Family Climaciaceae

Climacium americanum Brid.
Swamps.
On wet soil.
Occasional.

Family Leucodontaceae

Leucodon julaceus (Hedw.) Sull.
Low, floodplain woods.
On bark.
Occasional.

Family Theliaceae

Thelia hirtella (Hedw.) Sull.
Swamps.
On trunks.
Rare.

Thelia lescurii Sull.
Along rivers.
On sandy soil.
Rare.

Family Leskeaceae

Leskea obscura Hedw.
Low, floodplain woods.
On rotting wood.
Occasional.

Leskea polycarpa Hedw.
Low, floodplain woods.
On rotting wood.
Common.

Family Thuidiaceae

Anomodon attenuatus (Hedw.) Hueb.
Low, floodplain woods.
On rotting logs.
Occasional.

Anomodon rostratus (Hedw.) Schimp.
Low, floodplain woods.
On bark.
Occasional.

Haplocladium microphyllum (Hedw.) Broth.
Swamps.
On rotting wood.
Rare.

Haplocladium virginianum (Brid.) Broth.
Swamps.
On logs.
Rare.

Thuidium delicatulum (Hedw.) B. S. G.
Low, floodplain woods.
On moist soil; on rotting wood.
Common.

Thuidium recognitum (Hedw.) Lindb.
Swamps.
On rotting logs.
Occasional.

Helodium paludosum (Sull.) Aust.
Swamps.
On rotting logs.
Rare.

Family Amblystegiaceae

Campylium chrysophyllum (Brid.) J. Lange
Low, floodplain woods.
On wet soil.
Occasional.

Campylium hispidulum (Brid.) Mitt.
Swamps; low, floodplain woods.
On rotting wood.
Occasional.

Leptodictyum riparium (Hedw.) Warnst.
Along rivers.
On banks.
Rare.

Hygroamblystegium tenax (Hedw.) Jenn.
Swamps.
In wet soil.
Occasional.

Amblystegium juratzkanum Schimp.
Floodplains.
On moist soil; on rotting wood.
Common.

Amblystegium serpens (Hedw.) B. S. G.
Floodplains.
On moist soil; on rotting wood.
Common.

Amblystegium varium (Hedw.) Lindb.
Floodplains.
On moist soil; on rotting wood.
Common.

Calliergon cordifolium (Hedw.) Kindb.
Swamps.
On wet soil.
Rare.

Family Brachytheciaceae

Homalotheciella subcapillata (Hedw.) Broth.
Low, floodplain woods.
On rotting wood.
Occasional.

Brachythecium acuminatum (Hedw.) Aust.
Low, floodplain woods.
On logs.
Rare.

Brachythecium acutum (Mitt.) Sull.
Swamps.
On logs.
Rare.

Brachythecium campestre (C. Muell.) B. S. G.
 Along rivers.
 On wet soil.
 Occasional.

Brachythecium oxycladon (Brid.) Jaeg. & Sauerb.
 Floodplains.
 On moist soil.
 Occasional.

Brachythecium salebrosum (Web. & Mohr) B. S. G.
 Low, floodplain woods.
 On moist soil; on logs; on bark.
 Common.

Bryoandersonia illecebra (Hedw.) Robins.
 Floodplain woods and fields.
 On moist soil.
 Occasional.

Rhyncostegium serrulatum (Hedw.) Jaeg. & Sauerb.
 Low, floodplain woods.
 On moist soil.
 Occasional.

Eurhynchium hians (Hedw.) Sande Lac.
 Low, floodplain woods.
 On moist soil.
 Occasional.

Eurhynchium pulchellum (Hedw.) Jenn.
 Low, floodplain woods.
 On moist soil; on logs.
 Common.

Family Entodontaceae

Entodon challenger (Par.) Card.
 Low, floodplain woods.
 On rotting logs.
 Occasional.

Entodon cladorrhizans (Hedw.) C. Muell.
 Low, floodplain woods.
 On logs; on moist soil.
 Common.

Entodon seductrix (Hedw.) C. Muell.
 Floodplains.
 On moist soil.
 Common.

Pleurozium schreberi (Brid.) Mitt.
Swamps.
On wet soil.
Occasional.

Family Plagiotheciaceae

Plagiothecium denticulatum (Hedw.) B. S. G.
Low, floodplain woods.
On rotting wood.
Occasional.

Family Hypnaceae

Platygerium repens (Brid.) B. S. G.
Swamps.
On rotting wood; on trunks.
Occasional.

Pylaisiella selwynii (Kindb.) Crum, Steere & Anderson
Swamps.
On bark.
Occasional.

Hypnum cupressiforme Hedw.
Swamps.
On rotting wood; on moist soil.
Common.

Hypnum imponens Hedw.
Swamps.
On rotting wood.
Occasional.

Hypnum lindbergii Mitt.
Swamps.
On rotting wood.
Occasional.

Isopterygium elegans (Brid.) Lindb.
Low, floodplain woods.
On rotting wood.
Occasional.

Family Buxbaumiaceae

Buxbaumia aphylla Hedw.
Along rivers.
Clayey banks.
Occasional.

Diphyscium foliosum (Hedw.) Mohr
Along rivers.
Clayey banks.
Common.

Family Tetraphidaceae

Tetraphis pellucida Hedw.
Low, floodplain woods.
On moist soil; alluvial banks.
Common.

Family Polytrichaceae

Atrichum angustatum (Brid.) B. S. G.
Floodplain woods and fields.
Sandy soil.
Common.

Atrichum undulatum (Hedw.) Beauv.
Floodplain woods and fields.
Clayey soil.
Common.

Pogonatum brachyphyllum (Michx.) Beauv.
Along rivers.
Clayey banks.
Common.

Pogonatum pensilvanicum (Hedw.) Beauv.
Along rivers.
Clayey banks.
Common.

Polytrichum commune Hedw.
Floodplain woods and fields.
On moist soil.
Common.

Polystichum ohioense Ren. & Card.
Low, floodplain woods.
On moist soil.
Common.

Liverworts and Hornworts of the Mississippi and Illinois River Floodplains

The following list of liverworts (Hepaticae) and hornworts (Anthocerotae) is based on published records and private collections made by the investigator and some of his colleagues and students. For each species there is given a statement indicating its occurrence in the Illinois River floodplain or the Mississippi River floodplain. If found in both floodplains, only the term floodplain is used. A statement of habitat is given for each species, as well as an indication of abundance, based on the investigator's personal observation.

Nomenclature essentially follows Schuster (1953).

Family Anthocerotaceae

Anthoceros macounii Howe

Along Mississippi River.

Clayey, moist banks, usually below high-water level of spring floods.

Occasional.

Anthoceros crispulus (Mont.) Douin

Along Mississippi River.

Clayey soils on banks or in ditches.

Occasional.

Anthoceros punctatus L.

Along Mississippi River.

River banks.

Occasional.

Phaeoceros laevis (L.) Proskauer

Along Mississippi and Illinois Rivers.

Edges of rivers and lakes.

Common.

Notothylas orbicularis (Schwein.) Sulliv.

Along Mississippi River.

Sandy, alluvial soil.

Occasional; more common in Minnesota and Wisconsin.

Family Jungermanniaceae

Jamesoniella autumnalis (DC.) Steph.
Floodplains, and other habitats.
On decayed logs.
Common in the northeastern United States.

Jungermannia lanceolata L.
Floodplains, and other habitats.
On decayed logs.
Common in much of the United States.

Solenostoma gracillimum (Smith) Schust.
Floodplains.
Sandy soil.
Common in the eastern United States.

Solenostoma hyalinum (Lyell.) Mitt.
Floodplains.
Clayey banks.
Common in much of the United States.

Solenostoma fossombronioides (Aust.) Schust.
Floodplains.
Banks.
Common in northeastern United States.

Family Plagiochilaceae

Plagiochila asplenioides (L.) Dumort.
Floodplains and other habitats.
Marly soil.
Common.

Family Harpanthaceae

Geocalyx graveolans (Schrad.) Nees
Floodplains and other habitats.
On decaying logs.
Occasional.

Harpanthus scutatus (Web. & Mohr) Spruce
Floodplains; cliffs.
On decaying logs.
Rare.

Family Lophocoleaceae

Lophocolea heterophylla (Schrad.) Dumort.
Floodplain woods.
Banks; on soil under trees; on decaying logs.
Common.

Chiloscyphus polyanthus (L.) Corda
Swampy woods.
On decaying logs.
Occasional.

Family Scapaniaceae

Diplophyllum apiculatum (Evs.) Steph.
Lowlands.
Clayey soil.
Rare.

Family Cephaloziaceae

Cephalozia media Lindb.
Floodplain woods.
On decaying logs.
Common.

Family Blepharostomaceae

Blepharostoma trichophyllum (L.) Dumort.
Floodplain woods.
Banks; cliffs; on decaying logs.
Rare.

Family Lepidoziaceae

Lepidozia reptans (L.) Dumort.
Floodplains along Mississippi River (only Grant Co., Wisconsin).
Peaty soil; on decaying wood.
Rare.

Bazzania trilobata (L.) Gray.
Floodplain woods.
On wet logs; shaded banks.
Occasional.

Family Frullaniaceae

Frullania eboracensis Gottsche
Lowland woods.
On bark.
Common.

Frullania inflata Gottsche
Lowland woods.
On bark.
Common.

Frullania squarrosa (R., Bl. N.) Dumort.
Floodplain woods.
On bark.
Occasional.

Family Fossombroniaceae

Fossombronia cristula Aust.
Floodplain woods.
Alluvial banks.
Rare.

Family Pelliaceae

Pellia epiphylla (L.) Corda
Swampy woods.
Peaty soil.
Occasional.

Family Blasiaceae

Blasia pusilla (L.) Micheli
Along Mississippi River.
Clayey banks; ditches.
Occasional.

Family Riccardiaceae

Riccardia pinguis (L.) Gray
Along Mississippi and Illinois Rivers.
Marly soil; alluvial banks.
Common.

Family Ricciaceae

Ricciocarpus natans (L.) Corda
Along Mississippi River.
Mud flats.
Occasional.

Riccia fluitans L.
Mississippi River floodplain.
Floating in swamps.
Common.

Riccia sorocarpa Bisch.
Along Mississippi River.
Mud flats.
Rare.

Riccia sullivantii Aust.
Mississippi River floodplain.
Fallow fields.
Occasional.

Riccia arvensis Aust.
Along Mississippi River.
Mud flats.
Occasional.

Riccia hirta (Aust.) Underw.
Mississippi River floodplain.
Fallow fields.
Occasional.

Riccia frostii Aust.
Along Mississippi River.
Mud flats.
Rare.

Riccia beyrichiana Hampe
Along Mississippi River.
Fallow fields; mud flats.
Occasional.

Family Sphaerocarpaceae

Sphaerocarpus texanus Aust.
Mississippi River floodplain.
Fallow field.
Rare.

Lichens of the Mississippi and Illinois River Floodplains

The following list of lichens is based on collections in the herbarium of Southern Illinois University, Carbondale. Literature concerning lichens in the floodplains of the study area is non-existent. Several additions could be made to the list if systematic collecting were undertaken. For each species in the list, there is a statement indicating its habitat and its substrate. An indication of abundance is given, based upon existing collections.

Nomenclature follows Hale (1961).

Family Arthopyreniaceae

Arthopyrenia biformis (Borr.) Mass.
Low, floodplain woods.
On bark.
Occasional.

Family Buelliaceae

Rinodina exigua (Ach.) S. Gray
Low, floodplain woods.
On bark.
Occasional.

Family Caloplacaceae

Blastenia pollinii Mass.
Floodplain flatwoods.
On bark.
Rare.

Family Cladoniaceae

Cladonia bacillaris (Ach.) Nyl.
Swampy woods.
On bald cypress.
Rare.

Family Collemataceae

Leptogium cyanescens (Ach.) K rb.
Low, floodplain woods.
On bark.
Occasional.

Leptogium lichenoides (L.) Zahlbr.
Low, floodplain woods.
On bark.
Occasional.

Family Lecanoraceae

Lecanora chlarona (Ach.) Nyl.
Floodplain flatwoods.
On bark.
Occasional.

Family Lecidiaceae

Bacidia effusa (J. B. Smith) Trev.
Floodplain flatwoods.
On bark.
Occasional.

Bacidia fuscorubella (Hoffm.) Bausch.
Low, floodplain woods.
On bark.
Common.

Bacidia incompta (Borr.) Anzi
Swampy woods.
On logs.
Rare.

Lecidia vernalis (L.) Ach.
Floodplain woods.
On bark.
Occasional.

Family Parmeliaceae

Candelaria concolor (Dicks.) B. Stein
Along Illinois River (Jersey Co.).
On bark.
Rare.

Parmelia aurulenta Tuck.
Swamps.
On bald cypress.
Rare.

Parmelia caperata (L.) Ach.
Swamps.
On bald cypress.
Rare.

Parmelia crozalsiana B. de Lesd.
Low, floodplain woods.
On bark.
Occasional.

Parmelia erecta Berry
Around an oxbow lake (Alexander Co., Ill.).
On bark.
Rare.

Parmelia hypotropa Nyl.
Swamps.
On various trees and shrubs.
Common.

Parmelia perforata (Jacq.) Ach.
Low, floodplain woods.
On bark.
Occasional.

Parmelia rudecta
Swamps.
On bark.
Common.

Parmelia texana Tuck.
Low, floodplain woods.
On bark.
Rare.

Family Physciaceae

Physcia ciliata (Hoffm.) Dr.
Floodplain of Illinois River (Calhoun Co.).
On bark.
Rare.

Physcia grisea Zahlb.
Along Mississippi River (Jackson Co., Ill.).
On limestone cliff at edge of river.
Rare.

Physcia millegrana Degel.
Swamps; low, floodplain woods.
On bark.
Common.

Physcia orbicularis
Low, floodplain woods.
On bark.
Occasional.

Physcia stellaris (L.) Nyl.
Swamps.
On bark.
Occasional.

Physcia syncolla Tuck.
Low, floodplain woods.
On bark.
Occasional.

Physcia tribacoides Nyl.
Low, floodplain woods.
On bark.
Occasional.

Family Stictaceae

Xanthoria fallax (Hepp) Arn.
Low, floodplain woods.
On bark.
Common.

Family Cypheliaceae

Cyphelium carolinianum (Tuck.) Zahlbr.
Swamps.
On bark.
Rare.

Ferns of the Mississippi and Illinois River Floodplains

The following list of ferns is based on published records and collections made by the investigator and several of his students. For each species there are statements describing the habitat and the overall distribution. Relative abundance is also given for each species, based on the investigator's personal observation.

Nomenclature follows Mohlenbrock (1967).

Family Equisetaceae

Equisetum variegatum Schleich.

Border of a swamp (Carroll Co., Ill.).

Range: Greenland to Alaska, south to California, Illinois, and Pennsylvania.

Rare.

Equisetum arvense L.

Moist soil.

Range: Throughout North America.

Common.

Equisetum hyemale L. var. *affine* (Engelm.) A. A. Eaton

Shores and banks.

Range: Throughout North America.

Common.

Equisetum laevigatum A. Br.

Moist soil.

Range: Quebec to British Columbia, south to California, Texas, and West Virginia; Mexico.

Occasional.

Equisetum fluviatile L.

In water of lakes adjacent to Illinois River.

Range: Newfoundland to Alaska, south to Oregon, Illinois, and Pennsylvania.

Occasional.

Family Ophioglossaceae

Ophioglossum vulgatum L.

Low, floodplain woods.

Range: Prince Edward Island to Alaska, south to Mexico.

Rare, but possibly overlooked.

Family Polypodiaceae

Onoclea sensibilis L.

Low, floodplain woods.

Range: Newfoundland to Manitoba, south to Texas and Florida.

Common.

Cystopteris fragilis (L.) Bernh. var. *protrusa* Weatherby

Low, floodplain woods.

Range: New York to Minnesota, south to Oklahoma and Georgia.

Common.

Family Salviniaceae

Azolla mexicana Presl

Swamps; ponds.

Range: Wisconsin; Illinois; Missouri; British Columbia to California; Utah; Mexico.

Occasional.

Possible Impacts of Increased Barge Traffic
on Non-vascular Plants and Ferns

The following paragraphs give a general speculation on the effects which increased barge traffic on the Mississippi and Illinois Rivers may have on the non-vascular plants and ferns which grow in the flood-plains. The increased barge traffic may result from the construction of Lock and Dam 26 (Replacement). Speculation concerning wave wash, sand bar formation and destruction, air pollution, increased turbidity, and new construction sites will be considered.

Wave Wash. Increased barge traffic will mean stronger and more frequent waves striking the shorelines of the Mississippi and Illinois Rivers. Only those species of non-vascular plants which grow on the mud flats or along the banks of the rivers will be affected by increased wave action. The wave action may be sufficient enough to wash away some or all of these non-vascular plants.

The mosses which may be affected by increased wave action are listed below, along with a statement of their relative abundance.

Fissidens adiantoides - common

Pleuridium subulatum - common

Dicranella heteromalla - occasional

Dicranella varia - common

Barbula unguiculata - occasional

Desmatodon obtusifolius - rare

Thelia lescurii - rare

Leptodictyum riparium - rare

Buxbaumia aphylla - occasional

Diphyscium foliosum - common

Tetraphis pellucida - common

Pogonatum pensilvanicum - common

The following liverworts and hornworts may be affected by increased wave action:

Anthoceros macounii - occasional

Anthoceros crispulus - occasional

Anthoceros punctatus - occasional

Phaeoceros laevis - common

Notothylas orbicularis - occasional

Solenostoma hyalinum - common

Solenostoma fossombronioides - common

Blasia pusilla - occasional

Riccardia pinguis - common

Ricciocarpus natans - occasional

Riccia sorocarpa - rare

Riccia arvensis - occasional

Riccia frostii - rare

Riccia beyrichiana - occasional

Since most lichens occur away from the river's edge, they will not be affected by increased wave action. Only the rare *Physcia grisea*, which grows on a limestone cliff washed by the Mississippi River, might be dislodged from the rock crevices.

No ferns will be affected by increased wave action.

Sand Bar Formation and Destruction. Since none of the non-vascular plants nor ferns normally occupies sand bars, the destruction or building-up of sand bars is not applicable to this report.

Air Pollution. Although some lichens have been shown to be extremely sensitive to air pollution (Hale, 1961), the physical distance away from the river for most species of lichens lessens the chances that lichens in the floodplain will be adversely affected by any possible increase in air pollution from the increase in barges on the rivers.

Increased Turbidity. During construction of L & D 26 (Replacement) and the resulting increase in barge traffic on the river, there will undoubtedly be an increase in turbidity of the water. Suspended sediments generally affect planctonic organisms and productivity adversely by reducing light penetration. Several of the planctonic species known to occur in the Mississippi and/or Illinois River may disappear due to increased turbidity.

Construction Sites. Any construction sites which are developed along the rivers will cause massive destruction of any non-vascular plants which happen to be in the way. If most new construction is in already urbanized areas, less damage to non-vascular plants should be the result.

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